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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/538,769	01/04/2006	Philip Nigel Bartlett	P-7916-US	3731

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EXAMINER	
MENDEZ, ZULMARIAM	
ART UNIT	**PAPER NUMBER**
1795	

MAIL DATE	DELIVERY MODE
06/22/2009	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/538,769	BARTLETT ET AL.	
	Examiner	Art Unit	
	ZULMARIAM MENDEZ	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 March 2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-22* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-22* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 1 and 11 are objected to because of the following informalities: the cross-sectional area has been expressed in meters, instead of in its corresponding units of area (e.g., m^2). For examination purposes, the examiner has considered the limitation "…cross section in the order of 10^{-9} to 10^{-8} m" as "…***cross section*** in the order of 10^{-9} to 10^{-8} **m^2**". Appropriate correction is required.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

4. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bartlett (WO 99/00536) in view of Attard et al. (US Patent no. 6,203,925).

With regard to claims 1 and 11, Bartlett discloses porous films and membranes to be used as anode (positive electrode) or cathode (negative electrode) and solid electrolytes in electrochemical devices and sensors (page 3, lines 3-5; page 16, lines 1-6) wherein said positive electrode comprises a mesoporous structure having a periodic arrangement of substantially uniformly sized pores (page 7, lines 5-7). Bartlett fails to teach wherein the pores have a cross-section in the order of 10^{-9} to 10^{-8} m^2. Furthermore,

- $A_{c.s} = \pi r^2 = 4\pi d^2$; therefore,
- $d = \sqrt{\frac{A_{c.s}}{4\pi}}$
- For $A_{c.s} = 10^{-9}$ m^2, d = 8.92 μm
- For $A_{c.s} = 10^{-8}$ m^2, d = 28 μm

Even though Bartlett does not disclose a diameter in the range between 8.92 μm and 28 μm, Bartlett does disclose wherein the pore size can be varied by altering the hydrocarbon chain length of the surfactant used as structure-directing agent or by supplementing the surfactant by a hydrocarbon additive (page 10, lines 9-28) in order to obtain high specific surface areas, high double layer capacitances and provide a low effective series resistance to electrolyte diffusion as well as to exhibit greater mechanical, electrochemical, chemical and thermal durability (page 15, lines 22-26). This teaching is also exemplified by Attard who discloses porous metal-based materials having a substantially regular structure and uniform pore size (col. 1, lines 4-8) wherein the porous metal-based materials have particle diameter size form 90 nm to 2mm (.09μm to 2000 μm) in order to obtain high specific surface areas, high double layer

capacitances and provide a low effective series resistance to electrolyte diffusion as well as to exhibit greater mechanical, electrochemical, chemical and thermal durability (col. 5, lines 59-65). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify the diameter pore size of Bartlett, as exemplified by Attard, in order to obtain high specific surface areas, high double layer capacitances and provide a low effective series resistance to electrolyte diffusion as well as to exhibit greater mechanical, electrochemical, chemical and thermal durability.

With regard to claims 2-5, 15 and 22, Bartlett discloses wherein the mesoporous structure of the positive electrode is a metal, such as nickel or nickel alloys (page 4, lines 15-18), a metal oxide or hydroxide (page 4, lines 13-23; page 12, lines 17-31) wherein said metal oxide, such as Nickel oxide (page 5, lines 9-13; page 12, lines 20-32) forms a surface layer over said metal and extending over at least the pore surfaces (page 4, lines 22-23; page 5, lines 18-20).

With regard to claims 6 and 18, Bartlett further discloses wherein the mesoporous structure has a pore diameter in the range of about 1 to 10 nm (page 10, lines 24-26).

With regard to claims 7 and 19, Bartlett teaches wherein the mesoporous structure has a pore number density of about $4x10^{11}$ to $3x10^{13}$ pores per cm^2 (page 10, lines 28-30).

With regard to claims 8 and 20-21, Bartlett teaches wherein at least 75% of the pores in said mesoporous structure have pole diameters within 30%, of the average pore diameter, more preferably within 10%, and most preferably 5% of average pore

diameter (page 11, lines 1-4).

With regard to claims 9 and 10, Bartlett discloses wherein the mesoporous structure has a hexagonal arrangement of pores that are continuous through the thickness of the electrode (page 6, lines 29-31; se figure 1) having a pore periodicity of 60 Å (6nm).

With regard to claim 12, Bartlett teaches wherein said mesoporous structure is a film having a thickness in the range of about 100 Å to about 20 micrometers (page 9, lines 5-7).

With regard to claims 13, 14 and 16, Bartlett discloses wherein said negative electrode comprises a material such as carbon, nanoparticulate carbon, cadmium or palladium (page 12, lines 20-32; page 10, lines 1-2).

With regard to claim 17, Bartlett further teaches wherein said cell is constructed to function as a battery (page 16, lines 1-14).

Response to Arguments

5. Applicant's arguments filed on March 9, 2009 have been fully considered but they are not persuasive. The applicant argues the following:

a. Regarding the objection to claims 1 and 11, wherein the examiner assumed that the stated pore dimensions refer to cross sectional area and that these dimensions should have been in m^2, the applicant states that ***pore size*** means ***"pore diameter"*** (page 4, line 23 of the specification). In response, the examiner agrees with the applicant in the fact that the pore size means pore

diameter and can be expressed in units of length, such as meters. However, the instant claims recite "…a ***cross-section*** in the order of 10^{-9} to 10^{-8}m. It is well known in the art that the corresponding units of cross section are expressed in terms of area, such as in m^2. For these reasons, the examiner considers that the prior art previously presented is still deemed relevant and meets all to the instant application.

b. Applicant argues that Barlett mentions a wide range of possible applications in very general terms but does not mention power density or energy density. However, the examiner does not find this argument persuasive because the claimed invention does not require meeting specific power or energy density limitations. In addition, the applicant states that the present invention is concerned with meeting these requirements by using a positive electrode in an electrochemical cell, as recited in the claims. The examiner considers that since the Prior Art presented above meets the limitations recited in the claimed invention, it would also be capable of providing the required power and energy density in the portable electronic device.

Conclusion

6. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

7. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ZULMARIAM MENDEZ whose telephone number is (571)272-9805. The examiner can normally be reached on Monday-Friday from 9am to 5pm.

9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexa D. Neckel can be reached on 571-272-1446. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Harry D Wilkins, III/
Primary Examiner, Art Unit 1795

/Z. M./
Examiner, Art Unit 1795